

ABSTRACT

A new and useful load-limiting device for a vehicle occupant restraint is provided. The load-limiting device comprises a longitudinal, load-limiting member connected between the vehicle occupant restraint and an anchor point such as a vehicle seat or a structural part of the vehicle. The load-limiting member is configured to deform plastically to dissipate forces applied to the load-limiting member by the vehicle occupant during a crash. Moreover, according to the preferred embodiments, the design of the load-limiting member provides a new and useful form of plastic deformation to dissipate forces applied to the load-limiting member by the vehicle occupant restraint. Specifically, in one embodiment the load-limiting member comprises a deformable strip with a pattern of perforations disposed in staggered rows extending transverse to the strip. In another embodiment the load-limiting member comprises a deformable tube with a pattern of perforations disposed in staggered rings extending about the central axis of the tube. The configuration of the load-limiting member provides a plurality of beam like segments that deform progressively, and with bending beam characteristics, to dissipate forces applied to the load-limiting member by the vehicle occupant during a crash.